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UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 646

Contribution from the States Relations Service
A. C. TRUE, Director.

Washington, D. C. PROFESSIONAL PAPER April 8, 1918

LESSONS ON PORK PRODUCTION FOR ELEMENTARY RURAL SCHOOLS.[1]

By E. A. Miller, *Specialist in Agricultural Education.*

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INTRODUCTION.

Importance.—The growing of hogs is recognized as one of the most important phases of the live-stock industry. The value of hogs as meat-producing animals is attested by the facts that they are grown on 70 per cent of farms and that they constitute so large a part of the number of all farm animals. The United States Department of Agriculture Crop Report gives the following interesting figures with reference to the number of each kind of the leading farm animals in our country on January 1, 1917: Hogs, 67,453,000; sheep, 48,483,000; milch cows, 22,768,000; other cattle, 40,819,000; horses and mules, 25,765,000.

Educational value.—The great importance of the subject as indicated in the previous paragraph and the readiness with which it lends itself to the teaching of the principles of breeding, feeding, and management of farm animals give it unusual educational value. The application of these principles in connection with hogs may be studied and observed in the brief period of one year. Its educational value is recognized by school officials and extension workers and it is being made use of as a home project and as a phase of club work.

It is with a view to introducing into the schools in a definite way the study of this important phase of animal husbandry that the fol-

[1] Prepared under the direction of C. H. Lane, Chief Specialist in Agricultural Education.

Note.—This bulletin is intended for the use of teachers of elementary agriculture.

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lowing lessons are outlined. Each lesson topic affords ample material for one or more recitation periods.

Practical exercises.—The principles set forth in these lessons should be given practical application by the pupils in the growing of pigs at home. Such practice is usually denominated "home project" work. Suggestions in this connection under the heading "Practical exercises," are given with each lesson. Each member of the class should have charge of one or more pigs or assume responsibility for the care of hogs at home.

References.—The publications referred to may be had from the United States Department of Agriculture, Washington, D. C., so long as available. Teachers and pupils should write to the State college of agriculture for publications on the subject. All reference material possible should be secured at the beginning of the year.

Correlations.—Some suggestions are made in connection with each lesson topic as to the utilization of this subject in vitalizing the other subjects in the school curriculum. These correlation suggestions are not intended as a part of the lesson in connection with which they appear, but should be used with recitations in the other subjects. Teachers in rural schools should take advantage of every opportunity to give purpose to school instruction by connecting it with the problems at the homes of the pupils.

NOTE TO THE TEACHER.—To make most effective the teaching of the lesson topics found in this publication the following points should be kept in mind and observed: (1) A monthly or seasonal sequence plan should be followed in the presentation of topics; (2) simple classroom exercises such as the working out of feeding rations should be performed; and (3) members of the class should carry on home work with pigs for profit. To have real educational value this home work should meet the following requirements: (*a*) The work with pigs should be a part of the regular instruction in agriculture; (*b*) a definite plan should be followed in raising, feeding, and managing pigs; (*c*) the parents of pupils should agree to and approve the home work of pupils; (*d*) the home work should be carefully supervised by some competent person; and (*e*) detailed records of labor, methods, expenditures, and incomes should be kept and reported upon in writing by the pupil.

LESSON I.

TOPIC: TYPES AND BREEDS.

Time.—Early fall.

Lesson outline.—There are two types of swine, namely, the fat or lard type, and the bacon type. Both types are found to a greater or less extent in most parts of the country and are the outcome of local conditions rather than market requirements. The lard type prevails in sections where corn is used as the principal feed, and the bacon type is generally found on farms where corn is scarce and market conditions warrant the production of this type of hog.

The lard type (fig. 1) of hogs is one which has a compact, thick, deep, smooth body and is capable of fattening rapidly and maturing early,

The hams, back, and shoulders are the most valuable parts and should be developed to the greatest possible extent. The whole body of the animal should be covered with a thick layer of flesh representing the extreme development of meat production. This type of hog, under good conditions, should weigh 200 pounds or more when 7 to 9 months of age. This is the most popular market weight. Due to the facts that corn is the most abundant hog feed and lard hogs mature very early, this type predominates.

The most popular breeds of the lard type are the Berkshire, the Poland-China, the Duroc-Jersey, the Chester White, and the Hampshire.

The Berkshire had its origin in England and takes its name from a shire or county by that name. The color is black with white mark-

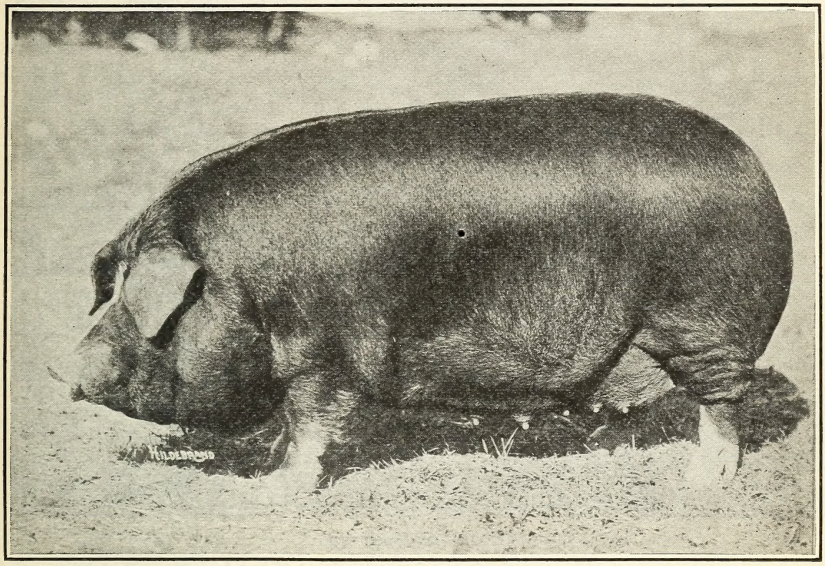

Fig. 1.—The lard type.

ings in the face, on the feet, and on the tip of the tail. The face is moderately dished and the snout is of medium length. The ears are usually erect, though they may incline forward in aged animals.

The Poland-China originated in Butler and Warren Counties, Ohio. The breed takes its name from the two breeds from the crossing of which it is supposed to have resulted, namely, a Poland breed and a Chinese breed. The color is black with white on feet, face, and tail. The face is nearly straight and the jowl is full and heavy. The ears should be firmly attached with the tip drooped.

The Duroc-Jersey had its origin in the blending of two red breeds, the Jersey Reds of New Jersey and the Durocs of New York. The color is cherry or yellowish red. The face is slightly dished, the snout is of medium length, and the ear is drooped.

The original Chester White had its origin in Chester County, Pa., hence the name. There are two other strains known as the Improved Chester White or Todd's Improved Chester White, and the Ohio Improved Chester White, commonly known as the OIC strain. The color is white. The face is straight; the snout is usually longer than that of the Poland-China. The ear is drooped. In general conformation the Chester White and Poland-China are very much alike.

The Hampshire breed was formerly known by the name of Thin Rind. The breed seems to have had its origin in Hampshire, England. The color is black with a white belt 4 to 12 inches wide encircling the

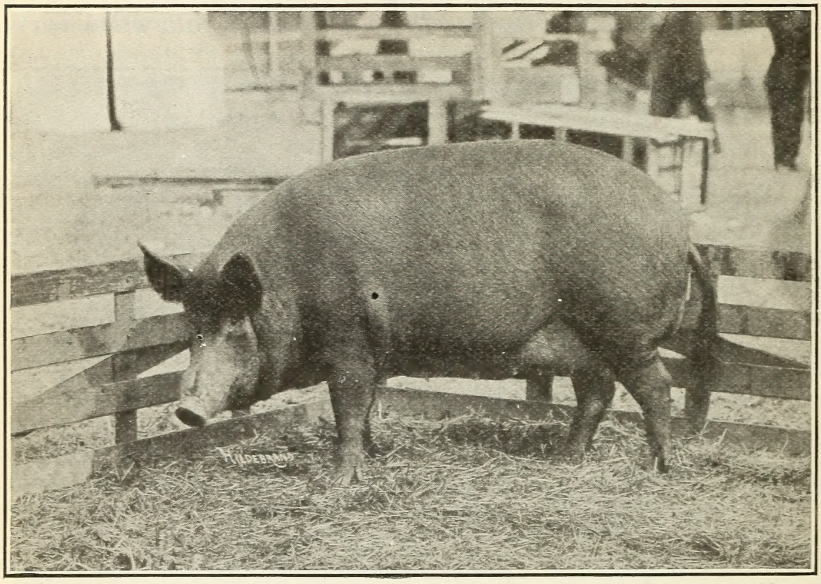

FIG. 2.—The bacon type.

body and including the forelegs. The face is straight and the ear inclines forward but does not droop.

The bacon type (fig. 2) differs from the lard type in that the animals are more active, have longer legs and stronger bones, and do not carry as much fat as the latter. Their bodies are longer than those of the lard hogs. The hams and shoulders are light but the bodies are deep and wide. The most popular market weight ranges from 175 to 200 pounds.

The most common breeds of this type are the Tamworth and the Yorkshire.

The Tamworth is of English origin and takes its name from Tamworth in Staffordshire. The color varies from a golden red to a chestnut shade. The face is practically straight, the snout is long and straight, and the ear is inclined slightly forward.

The large Yorkshire breed originated in England and takes the name of the shire of that name. The color is white. The face is slightly dished and the snout is of medium length. The ears are large and erect, but may incline forward in old animals.

Study questions.—Name the types of hogs. Give the distinguishing points of each type. Name the leading breeds of each type. Briefly describe each breed. What other breeds are found in the community? Describe each. To which type does each belong? For what purposes are hogs grown in the community? Home meat supply? Market?

References.—Farmers' Bulletin 765.

Practical exercises.—Make a hog survey of the community, using the accompanying table for tabulating the facts collected.

COMMUNITY HOG SURVEY.

Name of pupil..... Date.....

	Males.		Sows.		Small pigs.		Large pigs.		Total.		Notes.
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	
Pure bred.											
Berkshire											
Poland-China											
Duroc-Jersey											
Chester White											
Tamworth											
Yorkshire											
Hampshire											
Grades.											
Berkshire											
Poland-China											
Duroc-Jersey											
Chester White											
Tamworth											
Yorkshire											
Hampshire											
Scrub											
Grand total											

Correlations.—Few people know how to make tabulations of facts or to interpret statistical tables made by others. Exercises of this kind can be made a most important part of the written work of the pupils. Such work is provided in the foregoing "practical exercise." In addition to written work, facts are provided by such a tabulation for exercises in arithmetic adapted to the advancement of the pupils.

Compare the geographical conditions of the community with those sections in which various breeds of hogs originated.

Require the pupils to make sketches of the different breeds of hogs found in the community, placing special emphasis upon the characteristic features of each breed.

LESSON II.

TOPIC: HOUSES.

Time.—Early fall.

Lesson outline.—Location: A well-drained site should be selected and, if possible, should have sufficient elevation to give the hogs a climb in reaching it. If practicable the house should occupy the south side of a hill.

Principles of construction: Four important things should be observed in hog-house construction; namely, light, ventilation, warmth, and cleanliness. Light is provided by placing the house along a north and south line and by putting in suitable doors and

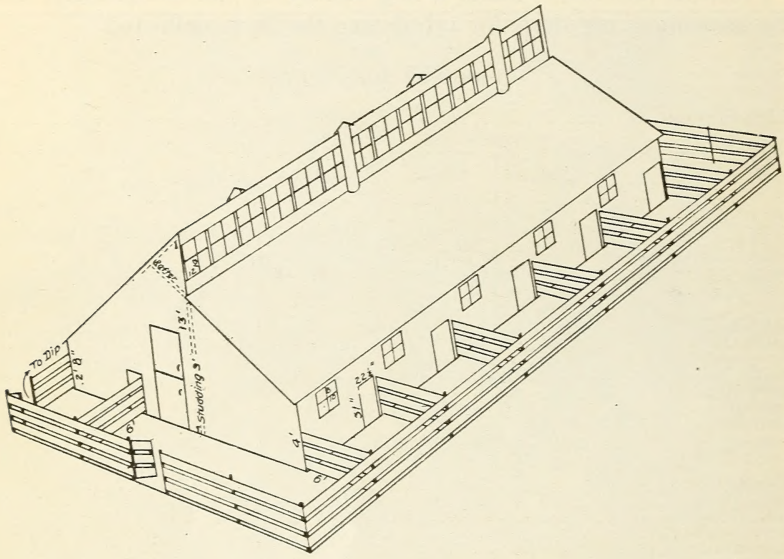

FIG. 3.—Large or community house.

windows. Doors, windows, and roof ventilation furnish a proper interchange of air. Hogs need good ventilation as well as people. A well-constructed house with good floor and bedding provides sufficient warmth.

Let it be remembered that the hog has little natural protection from cold; hence the necessity for comfortable quarters. Cement makes a satisfactory floor, but in colder climates must be covered with wooden false floors. A good floor makes it much easier to keep the house clean. The arrangement of the house should be such that the beds and feed floors are well separated.

Kinds of houses: There are two general classes of houses—large community or stationary (fig. 3), and small individual or movable (fig. 4). The large house has individual pens and is intended for

quite a number of hogs. The advantages of the large house are: It is more economical for a large number of hogs; it is convenient for feeding and affords provisions for saving manure. If the house is to be quite large it is usually advisable to arrange the pens in two rows with an alley way between. The alley should be 4 to 6 feet wide unless it is desirable to have space for the passing of a wagon. In that event the alley should be 8 to 10 feet wide.

The individual house, as the name suggests, is intended for one hog or for a sow and her brood. One decided advantage of the individual or portable house is that it can be moved from place to place

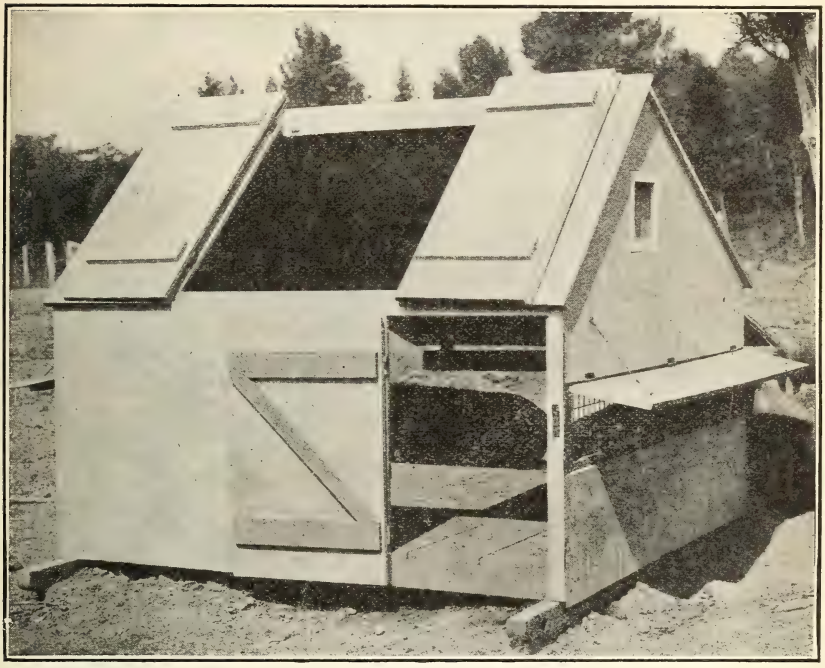

FIG. 4.—Individual or colony house.

and can thus be kept sanitary and made accessible to pastures. There are two general styles of individual houses, namely, the box-shaped with four upright walls and the A-shaped. The dimensions should be 6 feet by 10 feet, or 8 feet by 8 feet. Wooden floors are good, but not necessary. The floor should be higher than the outside level of the ground, to insure dryness. All houses should be sufficiently high to permit the attendant to move about them with comparative freedom. By placing fenders on the walls a few inches from the floor, individual houses may be used for farrowing pens.

Farrowing pens: When a number of sows are kept on a farm it may be desirable to have a regular farrowing pen. A small house pro-

vided with fenders (fig. 5) serves as a farrowing pen. Fenders may be made of 2 by 6 inch scantling and firmly attached to the walls of the pen some 6 inches above the floor. The object of the fender is to prevent the sow overlying young pigs.

Study questions.—What constitutes a good location for a hog house? What are the essentials of a good hog house? Name, describe, and give advantages of the different kinds of hog houses. What kinds of hog houses are found in the community? Which kind is most commonly used? Which seems most satisfactory?

References.—Farmers' Bulletins 438 and 566.

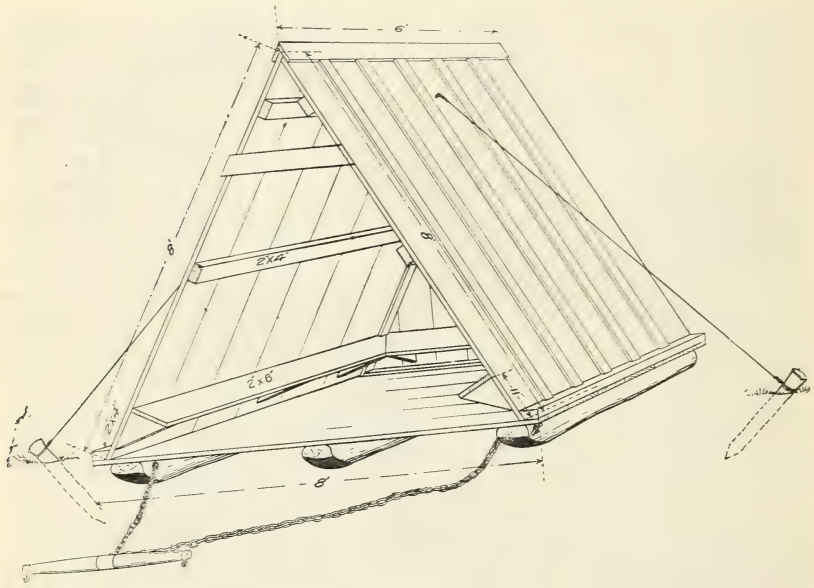

FIG. 5.—A small house provided with fenders.

Practical exercises.—(1) Take the class to visit a modern hog house in the community. Take notes on its location, construction, purpose, and accessories. Make a sketch of the general plan and arrangement. (2) When a visit is impracticable, have members of the class make written reports covering points mentioned in Exercise 1 as to hog houses at their own homes. (3) Pig-project members should provide proper housing for their pigs. The individual house is suitable for pig-project work.

Correlations.—Written work and drawing work are provided in the practical exercises.

Arithmetic: Finding the amount of material, its cost, and the cost of construction of the hog house visited or the houses reported upon by the members of the class provides splendid exercises in arithmetic.

LESSON III.

TOPIC: SWINE JUDGING.

Time.—Fall. Before fairs.

Lesson outline.—Purpose: To know that a hog possesses the necessary qualities for laying on fat or producing good bacon, or for transmitting such qualities to its offspring is important in connection with profitable swine production. There are certain characteristics peculiar to the fat or lard type of hog and the same is true of the bacon type. Those either directly or prospectively interested in swine production should be able to recognize those characteristics. Hence the necessity for judging swine.

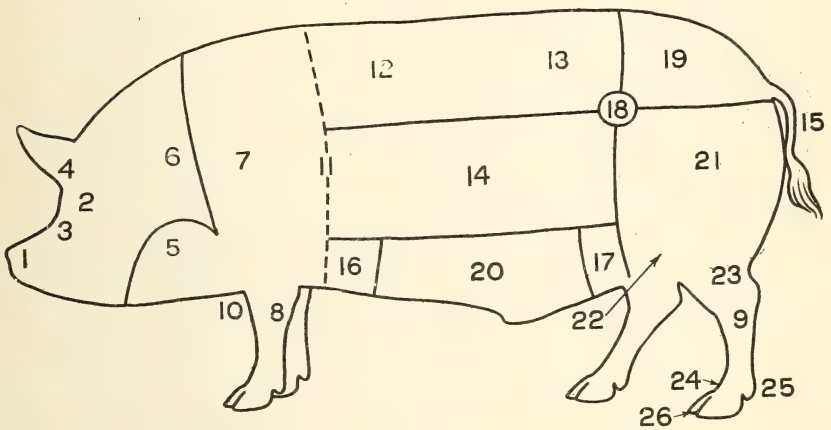

FIG. 6.—Parts of the hog: 1, snout; 2, eye; 3, face; 4, ear; 5, jowl; 6, neck; 7, shoulder; 8, forelegs; 9, hindleg; 10, breast; 11, chestline; 12, back; 13, loin; 14, side; 15, tail; 16, fore flank; 17, hind flank; 18, hip; 19, rump; 20, belly; 21, ham; 22, stifle; 23, hock; 24, pasterns; 25, dewclaws; 26, foot.

Parts of the hog (fig. 6): Before attempting the use of the score card the pupils should become familiar with the locations and names of the parts of the hog. The accompanying diagram with its legend should be studied carefully before using the score card.

The score cards: These are merely guides in making detailed studies of the hogs. Arbitrary values are assigned to the various points to emphasize their relative importance. The accompanying score cards should be studied carefully to enable the pupils to become familiar with them before attempting to use them. As much practice as possible should then be given in judging both fat and bacon types of hogs. The teacher should arrange for visits to farms of the community where pure-bred hogs are kept.

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SCORE CARDS.

Score Card for Lard Hogs.

Breed..... Name..... Register No.....

	Perfect score.	Student's score.	Corrected score.
General appearance, 36:			
Weight, score according to age	6		
Form, deep, broad, low, long, symmetrical compact, standing squarely on legs	10		
Quality, hair silky; skin fine; bone fine; flesh smooth, mellow, and free from lumps or wrinkles	10		
Condition, deep, even covering of flesh, especially in regions of valuable cuts	10		
Head and neck, 6:			
Snout, medium length, not coarse	1		
Eyes, full, mild, bright	1		
Face, short, cheeks full	1		
Ears, fine, medium size, soft	1		
Jowl, strong, neat, broad	1		
Neck, thick, medium length	1		
Fore quarters, 10:			
Shoulders, broad, deep, full, compact on top	6		
Breast, advanced, wide	2		
Legs, straight, short, strong; bone clean; pasterns upright; feet medium size	2		
Body, 30:			
Chest, deep, broad, large girth	2		
Sides, deep, lengthy, full; ribs close and well sprung	6		
Back, broad, straight, thickly and evenly fleshed	10		
Loin, wide, thick, straight	10		
Belly, straight, even	2		
Hind quarters, 18:			
Hips, wide apart, smooth	2		
Rump, long, wide, evenly fleshed, straight	2		
Ham, heavily fleshed, plump, full, deep, wide	10		
Thighs, fleshed close to hocks	2		
Legs, straight, short, strong; bone clean; pasterns upright; feet medium size	2		
Total	100		

Remarks.....

Name of pupil..... Date.....

SCORE CARD FOR BACON HOGS.

Breed..... Name..... Register No.....

	Perfect score.	Student's score.	Corrected score.
General appearance, 36:			
Weight, 170 to 200 pounds, largely the result of thick covering of firm flesh	6		
Form, long, level, smooth, deep	10		
Quality, hair fine, skin thin; bone fine; firm, even covering of flesh without any soft bunches of fat or wrinkles	10		
Condition, deep, uniform covering of flesh, especially in regions of valuable cuts	10		
Head and neck, 6:			
Snout, fine	1		
Eyes, full, mild, bright	1		
Face, slim	1		
Ears, thin, medium size	1		
Jowl, light, trim	1		
Neck, medium length, light	1		
Fore quarters, 10:			
Shoulders, free from roughness, smooth, compact, and same width as back and hind quarters	6		
Breast, moderately wide, full	2		
Legs, straight, short, strong; bone clean; pasterns upright, short; feet medium size	2		
Body, 34:			
Chest, deep, full girth	4		
Back, medium and uniform in width, smooth, slightly arched	8		
Sides, long, smooth, level from beginning of shoulders to end of hind quarters. The side at all points should touch a straight edge running from fore to hind quarter	10		
Ribs, deep	2		
Belly, trim, firm, thick without any flabbiness or shrinkage at flank	10		
Hind quarters, 14:			
Hips, smooth, wide; proportionate to rest of body	2		
Rump, long, even, straight, rounded toward tail	2		
Gammon, firm, rounded, tapering, fleshed deep, and low toward hocks	8		
Legs, straight, short, strong, feet medium size; bone clean; pasterns upright	2		
Total	100		

Remarks.....

Name of pupil..... Date.....

Study questions.—What is the purpose of judging swine? What is a score card? What are the characteristics of a good fat or lard hog? Bacon hog? What are the purposes of the fat or lard hog? Bacon hog? In what respects do the two types differ? Which is better adapted to the community? Have each member of the class make an outline diagram showing the parts of the hog. Name the parts.

References.—Farmers' Bulletin 566. Get State agricultural college publications.

Practical exercises.—(1) The teacher should arrange to give members of the class practice in judging different breeds of pure-bred hogs in the community. Where practicable, secure the assistance of the county demonstration agent or some person especially qualified in this respect. The class should judge the pigs owned by project members.

(2) If a community or county fair is conducted the teacher should take advantage of it to give the members of the class an opportunity to study and judge the best hogs in the community or county.

Correlations.—Require the members of the class to make several copies of the score cards for their personal use.

Making outline diagrams of hogs showing the parts of the hog affords practice in drawing.

LESSON IV.

TOPIC: FATTENING MEAT HOGS.

Time.—Early fall.

Lesson outline.—It is too expensive to fatten hogs entirely on corn and other concentrated feed; hence the necessity for fall pastures and other supplementary feed. During the first part of the fattening period the hogs should have access to good pastures such as cowpeas, soy beans, or peanuts in the South, and alfalfa or clover in the North and West. During this period some concentrated feed should be used to supplement the pastures. It is estimated that fattening hogs when on good pasture should be fed about 2 to 4 per cent of their weight daily of concentrated feed. After the pastures are exhausted the

FIG. 7.—"Hogging down" corn.

hogs should be placed in a small lot and finished off with concentrated feed. During the finishing off period the animals should receive daily 4 to 6 per cent of their weight of concentrated feed.

The practice of "hogging down" corn (fig. 7) has come to be a desirable method of fattening hogs in some sections. The advantage of this method is that the farmer's time is not consumed in gathering and feeding the corn to the hogs. To balance the ration and supply succulent food, it is well to grow with the corn such crops as cowpeas, soy beans, peanuts, rape, pumpkins, and the like. Where peanuts, cowpeas, or soy beans can not be grown it is necessary to feed the hogs alfalfa hay to balance the ration during early stages of the fattening period.

When hogs are being finished off in a small lot corn will, as a rule, constitute the principal part of the ration, yet it should be supple-

mented with nitrogenous and succulent feeds. The following combinations are suggested as rations:

1. Corn, 2 parts, wheat middlings, 1 part.
2. Corn, 2 parts, soy-bean meal, 1 part.
3. Corn, 5 parts, linseed meal, 1 part.
4. Corn, 9 parts, tankage, 1 part.
5. Corn, 1 part, wheat middlings 1 part, skim milk, 6 parts.

Hogs should be kept clean, ample fresh water supplied, and smal quantities of succulent feed provided during the finishing-off period.

Study questions.—What forage crops are grown in the community as grazing crops for hogs? What concentrated feeds are used to supplement corn for fattening hogs during the finishing-off period? Have each member of the class submit a statement showing the method of fattening practiced at his own home. This should include the pasture crops, the feed used to supplement pastures and the rations fed during the finishing-off process.

References.—Farmers' Bulletins 874, 411, and 913. Write to the agricultural college of the State for bulletins on the feeding or fattening of hogs.

Practical exercises.—(1) Students carrying on home projects with hogs should have pasturage for their hogs that are to be fattened. Select the pigs to be fattened. Make out rations of concentrated feeds, using those food materials that can be used most economically. These will usually include home-grown feeds.

(2) Members of the class that are not carrying on home projects with pigs should assume charge of the feeding and care of the fattening hogs at home. If feeding is to be done intelligently the hogs should be weighed at the beginning of the fattening period and at intervals of a week or 10 days thereafter. The weights of the hogs provide a basis for calculating the proper amount of feed.

Correlations.—Written reports of methods employed in fattening hogs at the homes of the pupils provide language work.

Calculating rations and the amounts of different kinds of feed needed to fatten the hogs of project members or at the homes of pupils provides interesting exercises in arithmetic. The cost of the materials used in the rations should be based on local prices.

LESSON V.

TOPIC: SELECTING BREEDING STOCK.

Time.—Late fall or early winter.

Lesson outline.—Importance of the brood sow: Influence of the sow upon the offspring is just as great as that of the male. Mismating or a poor sow will not only give unsatisfactory results in breeding, but it will likely discourage the beginning breeder. This latter fact would be especially true of a youth carrying on a home project with swine.

Qualities of a good sow: If possible, secure a pure-bred animal of a good strain. The forehead should be broad, the throat clean and trim, the neck moderately thin, the shoulders smooth and deep, the back wide and straight, the chest wide and deep, sides straight and deep, the body long and capacious, pelvic region broad and well developed, legs straight and moderately short, and a generally refined appearance; yet overrefinement may indicate a delicate constitution.

If a number of brood sows are to be used they should be uniform in type. This is necessary to secure a uniform lot of pigs. It is very unsatisfactory and unprofitable in breeding to have litters of pigs varying in appearance and lacking uniformity. To insure a uniform result it is advisable to select sows from a well-established strain of hogs.

Importance of the male: As was indicated in the case of the sow, both parents have practically the same influence on the quality of the offspring; however, the male has the greater influence on the entire herd, since every pig is sired by the male, whereas all pigs do not have the same dam.

While too much stress can not be placed on the importance of the sow, if possible the male should be superior to the sow. Regardless of the type of the sow, a poor male should never be used.

Qualities of a good male: Secure a pure-bred animal of a good strain. The masculine characteristics should be strongly developed, especially in the head and neck; the back should be broad, arched and deeply fleshed; sides deep and long; quarters well developed; legs straight and strong. The animal should stand well up on his toes.

Mating: Overrefined sows should be mated to rather masculine males, and coarse sows should be mated to males of high quality indicated by fine bone, skin and hair.

Study questions.—Compare the importance of the sow and the male. If there are pupils in the class doing home project work with pigs, have them compare their brood sows with the qualities set forth as desirable. If members of the class contemplate buying a brood sow or securing the services of a male, they should apply the standards set forth in the lesson.

References.—Farmers' Bulletins 874 and 566.

Practical exercises.—(1) Members of the class who are beginning home projects with swine should select and secure their breeding stock. (2) Those who have grown a litter of pigs should select the animals best adapted to breeding purposes and dispose of them as such. Other pigs should be fattened for meat or disposed of for that purpose.

Correlations.—Have pupils write a brief description of a desirable brood sow.

LESSON VI.

TOPIC: DRESSING AND CURING MEAT.

Time.—Midwinter.

Lesson outline.—Dressing. Killing: This is done by inserting a knife with a narrow straight blade 8 inches long into the hog's throat just in front of the breastbone. The point of the knife should be directed toward the root of the tail in line with the backbone. When the knife has been inserted 6 or 8 inches it should be given a quick turn and withdrawn.

Scalding and scraping: In scalding the best results are had by using water at a temperature of 185° to 195°. Boiling water placed in a cold barrel is ordinarily reduced to a proper temperature. If the water is too cool much time is required in removing the hair and if it is too hot the hair is likely to set. A shovelful of hard wood ashes, a lump of lime, a handful of soap, a little pine tar or tablespoonful of lye helps to loosen the hair.

The hog should not be scalded before life is extinct or the surface blood will be cooked, giving the body a reddish tinge. While being scalded the hog should be kept constantly moving. As soon as the hair and scurf slip easily from the surface scalding is complete. If the water is too hot scald the hind end first; if not, scald the front end in order to get a good scald on the head, which is difficult to clean. Clean the head and feet first. The hands and a knife or a candlestick scraper are all that are necessary to remove the hair. After the hair is practically all removed rinse the body with hot water and shave the remaining hairs with a sharp knife. Raise the gambrel cords, insert the stick and hang up the hog.

Removing the entrails: Split the hog between the hind legs, separating the bones by cutting through the joint with a knife. Next run the knife down the middle line of the body, guiding with the right hand and shielding the point with the left hand. Split the breastbone with a knife or an axe and continue the cut on down to the chin. Remove the entrails. Open the jaw and insert a small block to allow free drainage. Wash out all the blood with cold water. The carcass should now be allowed to cool over night. If the weather is warm remove the backbone to hasten cooling.

Cutting (fig. 8): Pork may be cut as soon as thoroughly cool. Remove the head back of the ears, remove the backbone and the spareribs, cut off the shoulders between the fourth and fifth ribs, and cut off the hams 2 inches in front of the pelvic bones. Trim the hams to smooth rounded pieces. Remove the fat from all parts and take out the loin. Cut the sides into two or three pieces.

Curing meat: The meat should be allowed to cool thoroughly before it is salted. If the weather is cool, 24 to 36 hours is sufficient time to allow for this purpose.

A clean hardwood barrel is a suitable vessel in which to cure meat. To insure cleanliness, scald the barrel thoroughly. Salt, saltpeter, and sugar or molasses are used most commonly as preservatives. Too much saltpeter should not be used, as it is harmful to the health. Two to four ounces per 100 pounds of meat is as much as it is well to use. Salt and saltpeter have a tendency to dry out and harden the meat, hence by adding a little sugar or molasses the meat is softened and the flavor is improved. For each 100 pounds of meat use 5 pounds of salt, 2 pounds of granulated sugar, and 2 ounces of saltpeter. Mix them thoroughly and rub the meat once every three days with a third of the mixture.

The brine-cured meats are considered best for farm use. Brine is less troublesome and at the same time gives better protection against insects and vermin. During warm weather brine should be watched

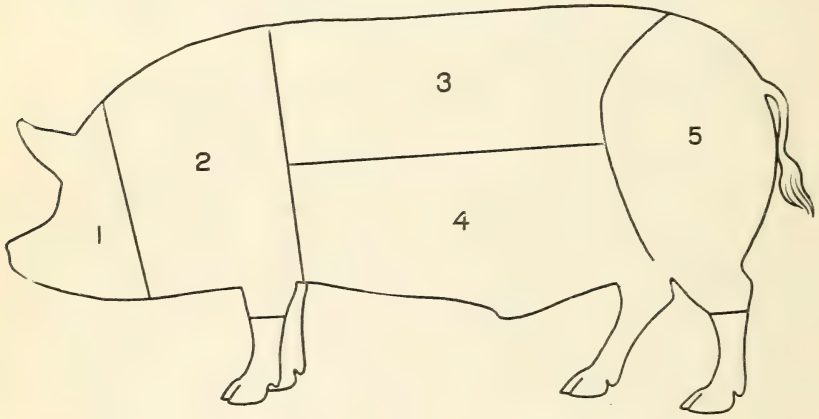

FIG. 8.—Cuts of pork: 1, head; 2, shoulder; 3, loin; 4, belly; 5, ham. Pure-bred Berkshire barrow.

carefully. If it becomes ropy it should be reboiled or new brine made. Ten pounds of salt, 2 ounces of saltpeter dissolved in 4 gallons of boiling water should be used to each 100 pounds of meat. Cool the brine before pouring it over the meat. Meat should remain in the brine three to four days for every pound of meat in each piece.

After the meat has been cured thoroughly by one of the foregoing methods it should be smoked. The meat should be washed thoroughly and permitted to drip before the smoking process begins. The smoke should be provided by a slow fire of some hard wood, such as green hickory or maple. In the winter months the smoke should be kept going continuously until the smoking is completed. During the spring and summer a light fire should be kept going a day at a time every two or three days. This intermittent smoking should be kept up for two weeks, then provide a continuous smoke for 24 to 36 hours and the smoking is completed.

Study questions.—Secure a written report from each member of the class covering the following: How are hogs butchered? What devices

are used in scalding and in elevating the carcass for dressing? What instruments are used in dressing the carcass and in cutting up the meat? What vessels are used in which to cure the meat? What preservatives are used for curing? Give the proportions of the preserving materials used.

References.—Farmers' Bulletin 913. Write to the State agricultural college for publications on dressing and curing meat.

Practical exercises.—Make a study of the community's pork production: (*a*) How many hogs butchered at each farm? (*b*) The dressed weight of each hog? (*c*) The total weight of the hogs dressed on the farms of the community? (*d*) The value at local prices of the pork dressed in the community? (*e*) The amount of dressed pork sold and shipped out of the community? (*f*) The number and value of all the fat hogs sold and shipped out of the community? Tabulate these facts.

Correlations.—Collecting and tabulating the facts called for in practical exercises provide language and arithmetic exercises.

Geography: Does the community produce its supply of pork? If not, in what markets is it purchased? The returns from what money crop are spent for pork? If the community has a surplus of pork, in what markets is it sold? Are other products bought in the same markets? Could they be home grown?

LESSON VII.

TOPIC: SOW AND PIG MANAGEMENT.

Time.—Spring or fall.

Lesson outline.—Care and feed of the sow: Many farmers have their sows farrow during the months of March and April and in the early fall months in the South. Since the weather is often severe in northern sections during March and April, care should be taken to protect the sow from cold. Give her enough straw to make a warm bed, but not so much as to allow the little pigs to get covered and crushed. The sow should have clean water but nothing else for the first 24 hours after the pigs arrive.

On the second day a thin bran mash or skim milk will be relished. Feed moderately for the first week. A mixture of two parts of corn and one of middlings may be fed in increasing amounts until the sow is eating a full feed. If skim milk can be fed in addition to the grain, there is nothing better to make the sow give a full flow of milk. Another good grain mixture for the sow at this time is six parts of corn and one of oil meal. If skim milk is available, the sow will do well on 4 pounds of milk to 1 of corn. A full grain ration for a day should never be more than 4 per cent of the sow's live weight. If the sow can be put on alfalfa, clover, bluegrass, or rape pasture, less

corn will be required. A corn ration of about 2 per cent of the sow's live weight with good pasture makes a cheap and adequate supply.

Care and feed of the young pigs: As soon as the little pigs begin to eat they will do best if fed additional slop in a separate pen and away from their mother and the larger pigs. This can be done by having a pen or a lot where choice clover or other forage crop is growing to which the pigs may have access, but where the opening is so small that the larger pigs can not pass through. When the young pigs are from 8 to 10 weeks old they should be weaned. This often causes a serious check in their growth, but should not do so. When it is desirable to wean the pigs put the mother in a pen leaving a creep for the pigs. Feed the sow sparingly; give water instead of slop and have the grain ration dry. While the sow is receiving a maintenance ration the pigs should be fed all they will consume without waste. A ration consisting of such feeds as skim milk, middlings, corn, and green forage will satisfy the pigs' appetites and simplify the weaning.

Study questions.—What advantages are there in having sows farrow during the early spring months? What precautions should be taken to protect young pigs from severe weather? Give directions for the care of the sow after the arrival of the pigs. Give directions for the care of the pigs until weaned; after weaning.

References.—Farmers' Bulletins 874 and 566. Secure State agricultural college publications on the subject.

Practical exercises.—(1) Students who have home projects with swine should secure a pig and begin to give it attention. If it is the purpose of the boy to go into the work more extensively he should have a sow and litter of pigs to care for. Observe instructions in this lesson.

(2) Boys in the class who are not carrying on projects with pigs should assume responsibility for the care of a sow and litter of pigs from the time the pigs arrive until they are weaned.

Correlations.—Arithmetic: The entire expense in connection with the project should be kept. In projects including a sow and litter of pigs, the feed of the sow should be charged against the pigs until the pigs are weaned. Cash accounting with the growing of the pigs provides exercises in arithmetic.

LESSON VIII.

TOPIC: FORAGE CROPS.

Time.—Spring.

Lesson outline.—Importance: The successful and economical production of pork depends in a large measure upon good permanent pastures supplemented by other forage crops. There should be on an average 1 acre of permanent pasture for each brood sow kept. Green forage is little more than a maintenance ration, and if rapid gains are desired hogs should have a liberal allowance of grain. Growing

forage crops and grazing them off is a good method of improving soils lacking in organic matter.

Kinds of crops: (*a*) For the cotton belt Bermuda, bur clover, white clover and Lespedeza make good permanent pastures. These should be supplemented by small grains and rape for winter, crimson clover and vetch for spring, cowpeas (fig. 9) and sorghum for summer, corn with soy beans, velvet beans or peanuts for fall. (*b*) For the Central and Middle Atlantic States, including the bluegrass region, bluegrass should be used largely for permanent pasture. It should be supplemented by rye (fig. 10) for winter, rape (fig. 11) for spring, red clover for spring and summer, corn with soy beans and rape for

FIG. 9.—Grazing cowpeas.

fall. (*c*) For the Northern and Eastern States bluegrass or redtop provides permanent pasture. Supplementary grazing should be furnished by oats and peas for spring, rape and red clover for summer, and early field corn for fall. (*d*) For the West grazing is furnished by alfalfa and corn. Corn should be "hogged down."

Study questions.—What is the value of the permanent pasture? Why are supplementary crops necessary? What grazing crops are used in the community for permanent hog pastures? What supplementary grazing crops are grown? Make out a list of seasonal succession crops for supplementary grazing adapted to the community. Compare this list with the crops suggested for your section of the country.

References.—Farmers' Bulletins 874, 272*, 331*, 411, 566, 599*. Write to the State agricultural college for publications relating to the subject.

FIG. 10.—Grazing rye.

Practical exercises.—(1) Students carrying on home projects with pigs should provide pasturage and supplementary grazing. At least 1 acre of a good permanent pasture should be provided for the

FIG. 11.—Grazing rape.

brood sow and her litter of pigs. Seasonal supplementary crops should also be grown. At least three-tenths of an acre of each crop should be provided for each mature hog.

* May be obtained only from the Superintendent of Documents, Government Printing Office, Washington, D. C.

(2) Make a study of the permanent pastures of the community with reference to the type or types of soil used, the kind or kinds of grass crop, the period of the year during which grazing is afforded, the life in years of each kind of permanent pasture, the method of planting or seeding, the number of acres in permanent pasture on each farm, the total pasture acreage in the community, the percentage of arable land devoted to pasturage, and the average number of hogs an acre of pasture supports.

Correlations.—Tabulating the information called for in Exercise 2 provides written work and exercises in arithmetic.

LESSON IX.

TOPIC: SANITATION AND DISEASES.

Time.—Spring.

Lesson outline.—Sanitation: Hogs should be provided with clean, dry, well-ventilated quarters. Feeding places should be kept clean

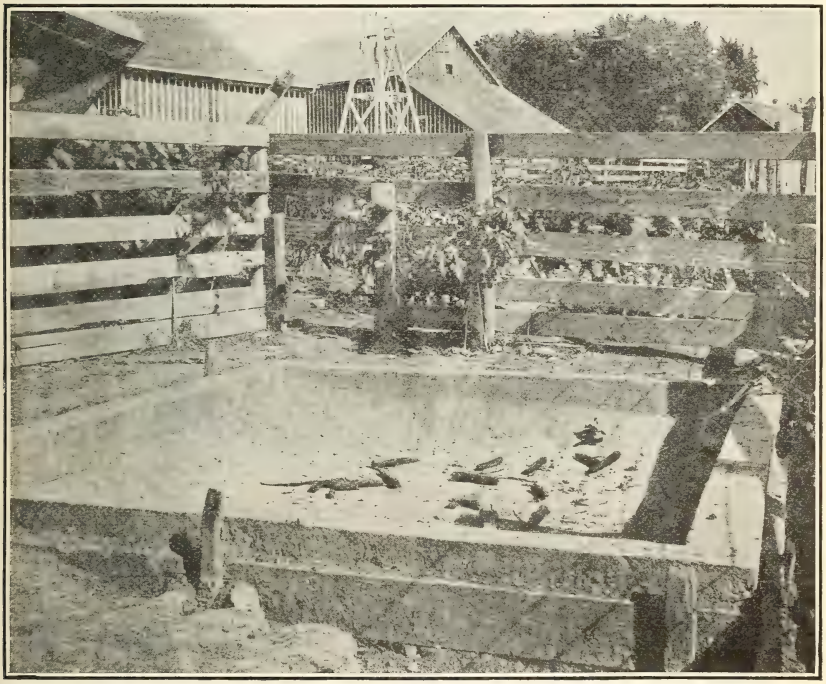

FIG. 12.—A cement wallow—a desirable type.

and the water supply pure. Hogs should be allowed access only to streams the sources and courses of which are known to be uncontaminated. Wallows (fig. 12) should be kept clean and supplied constantly with clean water. The houses and immediate premises should be thoroughly disinfected (fig. 13) once a month with air-slaked lime or a 5 per cent solution of crude carbolic acid. Animals that show indications of sickness should be immediately isolated

and the premises thoroughly disinfected. New hogs brought to the farm should be isolated or quarantined for two weeks before they are permitted to run with the herd.

Hog lice: Hogs, and especially young pigs, often suffer much from this cause. When numerous, lice are a serious drain on vitality, fattening is prevented by them, and hogs so affected are very much more subject to disease. To eradicate lice, dip, spray, or rub hogs with crude oil, crude-oil emulsion, or kerosene-oil emulsion every 10 days for three or four applications.

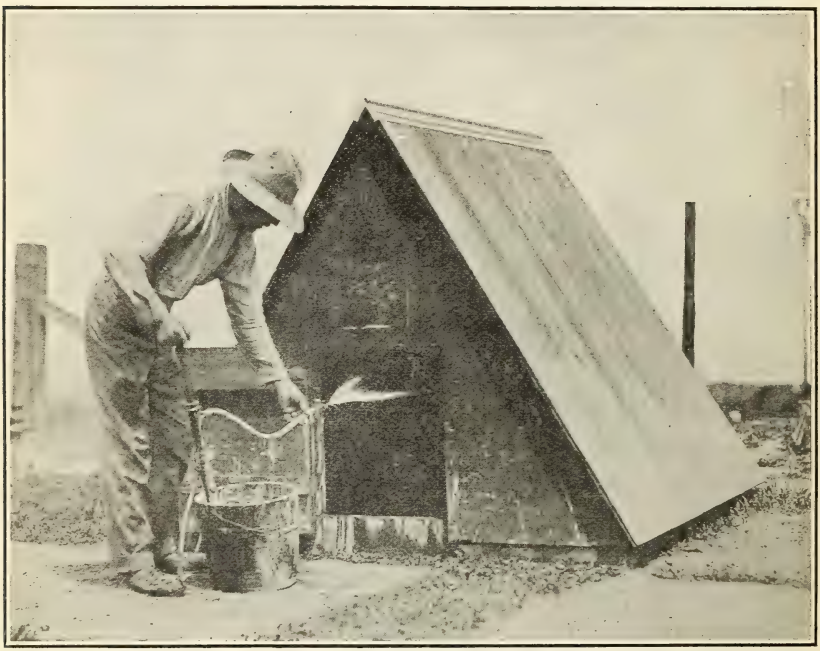

FIG. 13.—Disinfecting a hog house.

Mange: (*a*) This very troublesome affection with hogs is caused by a mite or parasite that pricks the skin of the hog to get tissue fluid. This injury produces a red spot which finally results in a scale under which mites may be found. (*b*) The symptoms are itching followed by a loss of hair and thickening and cracking of the skin. (*c*) Treat mange by applying lime sulphur or nicotine dip once every 10 days for three dippings. Hogs should be washed thoroughly with soap, water, and brush before dipping, to remove the scales.

Hog cholera: (*a*) The real cause of hog cholera is a very small germ found in the blood or urine. It may be said that anything which tends to lower the health of the animal, such as improper feeding, insanitary conditions of hog lots, damp or cold sleeping places, and

dirty drinking and feeding troughs may be regarded as an indirect cause.

Since the disease can only be started by the introduction of the germ into the herd, and the organism is always present in the bodies of sick hogs and is thrown off in the feces and urine, the most dangerous factor in spreading the disease is the sick animal.

It may get into the herd by sick hogs escaping from a neighboring herd, by the purchase of new stock not showing symptoms, by returning show hogs after visits to fairs or stockyards, and by the purchase of hogs which apparently have recovered.

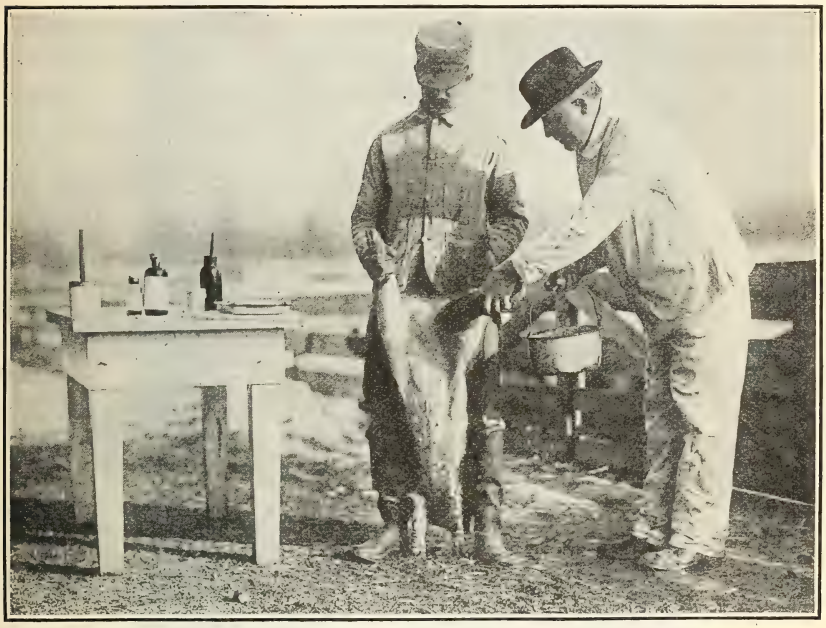

FIG. 14.—Scrubbing and cleaning the part preparatory to injecting the serum.

(*b*) The symptoms are not constant and uniform, therefore the disease can not always be diagnosed with absolute certainty. Animals suffering from intestinal troubles, indigestion, and poisoning exhibit symptoms which closely resemble those of cholera.

In the early stages, hogs huddle together; have high temperatures (105 to 107° F. or higher); are constipated; the feces often streaked with blood; a characteristic odor is present; and after the third or fourth day diarrhea develops. As death approaches there is usually a reddening of the skin on the under surface of the body, snout, and ears. This turns into a purple color if death is delayed a day or two. There is a discharge of mucus from the eyes. Coughing may or may not be present. In chronic cases there is emaciation, and patient may linger for days and weeks.

(*c*) Prevention is the better treatment. Separate sick animals from the herd at once. Vaccinate (figs. 14 and 15) the apparently healthy hogs with antihog-cholera serum. This serum only protects the hogs against cholera. It is a preventive and in no wise a cure. It is advisable to take the temperature of the hogs. This should not be more than 104° F.

Burn or bury the carcasses of hogs that have died with the disease, disinfect all pens and yards after an outbreak of cholera. Burn all manure, litter, and straw, then apply a coat of coal tar. Pens should be situated so that they can be properly drained and cleaned.

FIG. 15.—Injecting the serum in the flank.

Proper feeding, plenty of exercise, clean pens, and an abundance of sunshine will do a great deal toward protecting hogs from cholera.

Study questions.—What steps should be taken to prevent diseases of hogs? What diseases are most commonly found in the community? What diseases have proved most serious? What methods have been employed to prevent or to eradicate diseases? What type or types of dipping vats are used in the community? Have each member of the class describe a vat that is used at his own home or at the home of a neighbor.

Practical exercises.—Make a study of the diseases of hogs in the community for the preceding year with reference to the following

points: (*a*) The kinds of diseases, (*b*) the number of hogs affected by each disease, (*c*) the treatment used in connection with each disease, (*d*) the number of mature hogs lost from disease, (*e*) the estimated value of such hogs, (*f*) the number of pigs lost from disease, (*g*) the estimated value of the pigs, (*h*) and the total estimated value of all hogs lost from disease. These facts should be tabulated and preserved for study.

Correlations.—Written work and arithmetic problems are involved in the foregoing practical exercises.

PIG-CLUB WORK.

In the use of this publication it is suggested that teachers apply the facts set forth in the lessons to the activities of the pig-club work. For full instructions on pig-club work and record books to be used by members of pig clubs, teachers and pupils should write to the extension divisions of the State agricultural colleges and to the United States Department of Agriculture.

PUBLICATIONS OF THE U. S. DEPARTMENT OF AGRICULTURE RELATING TO HOGS.

AVAILABLE FOR FREE DISTRIBUTION BY THE DEPARTMENT.

Feeding Hogs in the South. (Farmers' Bulletin 411.)
Hog Houses. (Farmers' Bulletin 438.)
Boys' Pig Clubs. (Farmers' Bulletin 566.)
Breeds of Swine. (Farmers' Bulletin 765.)
Castration of Pigs. (Farmers' Bulletin 780.)
Tuberculosis of Hogs. (Farmers' Bulletin 781.)
Live Stock Classification at County Fairs. (Farmers' Bulletin 822.)
Hog Cholera: Prevention and Treatment. (Farmers' Bulletin 834.)
Swine Management. (Farmers' Bulletin 874.)
The Self-Feeder for Hogs. (Farmers' Bulletin 906.)
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Pasture and Grain Crops for Hogs in the Pacific Northwest. (Farmers' Bulletin 599.) Price, 5 cents.
The Hog Industry. (Bureau of Animal Industry Bulletin 47.) Price, 30 cents.
Etiology of Hog Cholera. (Bureau of Animal Industry Bulletin 72.) Price, 25 cents.
Recent Work of Bureau of Animal Industry Concerning Cause and Prevention of Hog Cholera. (Separate 484 from Yearbook 1908.) Price, 5 cents.
Feeding Dried Pressed Potatoes to Swine. (Department Bulletin 596.) Price, 5 cents.
Fish Meal as a Feed for Swine. (Department Bulletin 610.) Price, 5 cents.
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Swine Judging Suggestions for Pig-Club Members. (Office Secretary Circular 83.) Price, 5 cents.

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